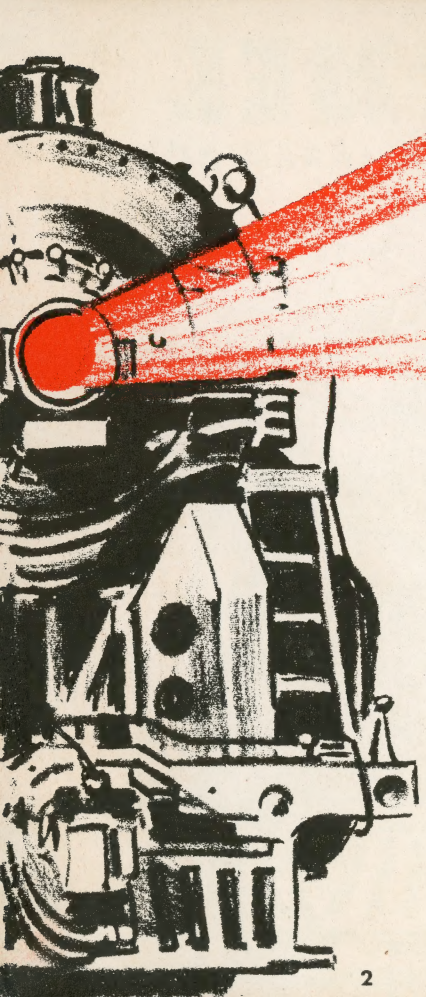
FUN with LIONEL

MODEL RAILROADING

EXCITING NEW LAYOUTS ★ FASCINATING GAMES ★ COLORFUL LIGHTING EFFECTS



CLEAR THE TRACK!

Of all the hobbies in the world, none offers as much excitement and fun as model railroading. For here, in miniature, are all the thrills and drama, all the color and adventure of real railroading. You can be the engineer or brakeman, the yardmaster or conductor. You can highball the speedy Lionel passenger or sit at the throttle of the powerful little switcher. You can have a complete railroad system, accurate to the smallest detail, right in your own home or backyard.

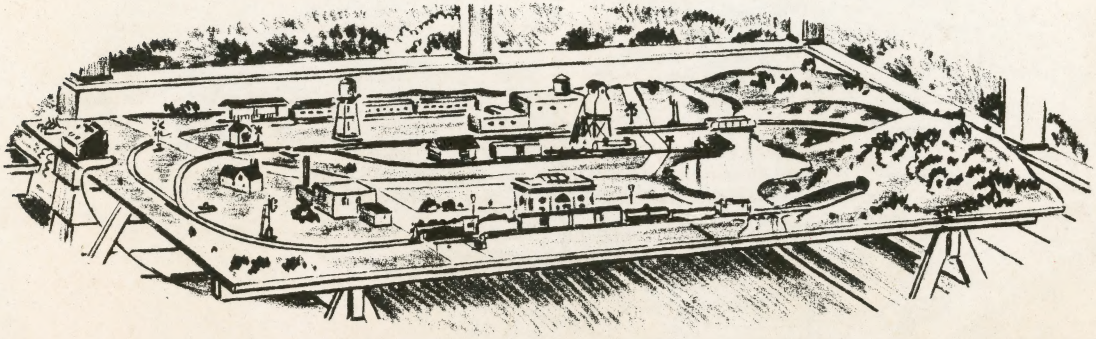
This book will show you how to set up a number of Lionel model pikes that will give you and your friends years of enjoyment. In dozens of fascinating pictures and diagrams you will see how easy it is to build a layout for Spring and Summer, for Fall and Winter. *Fun with Lionel Model Railroading* will show you how to play such exciting games as The Mystery of the Gold Shipment, The Runaway Wildcat, The President's Train and others. You will learn how to make tiny warehouses, factories, trucks and automobiles.

Best of all, there are no complicated diagrams or tedious instructions. Everything is simple and clear. This book has only one aim: to show you how you can get the most real, honest-to-goodness fun out of your Lionel trains.

If you only use your Lionel trains indoors during the long Winter months, you're missing a whale of a lot of fun. Spring is one of the best seasons of the year for model railroading. The illustration below shows a typical such layout which you can easily set up on a porch or in an open shed. Here the track is fixed to the table and the surrounding area landscaped with trees, shrubs and model buildings.

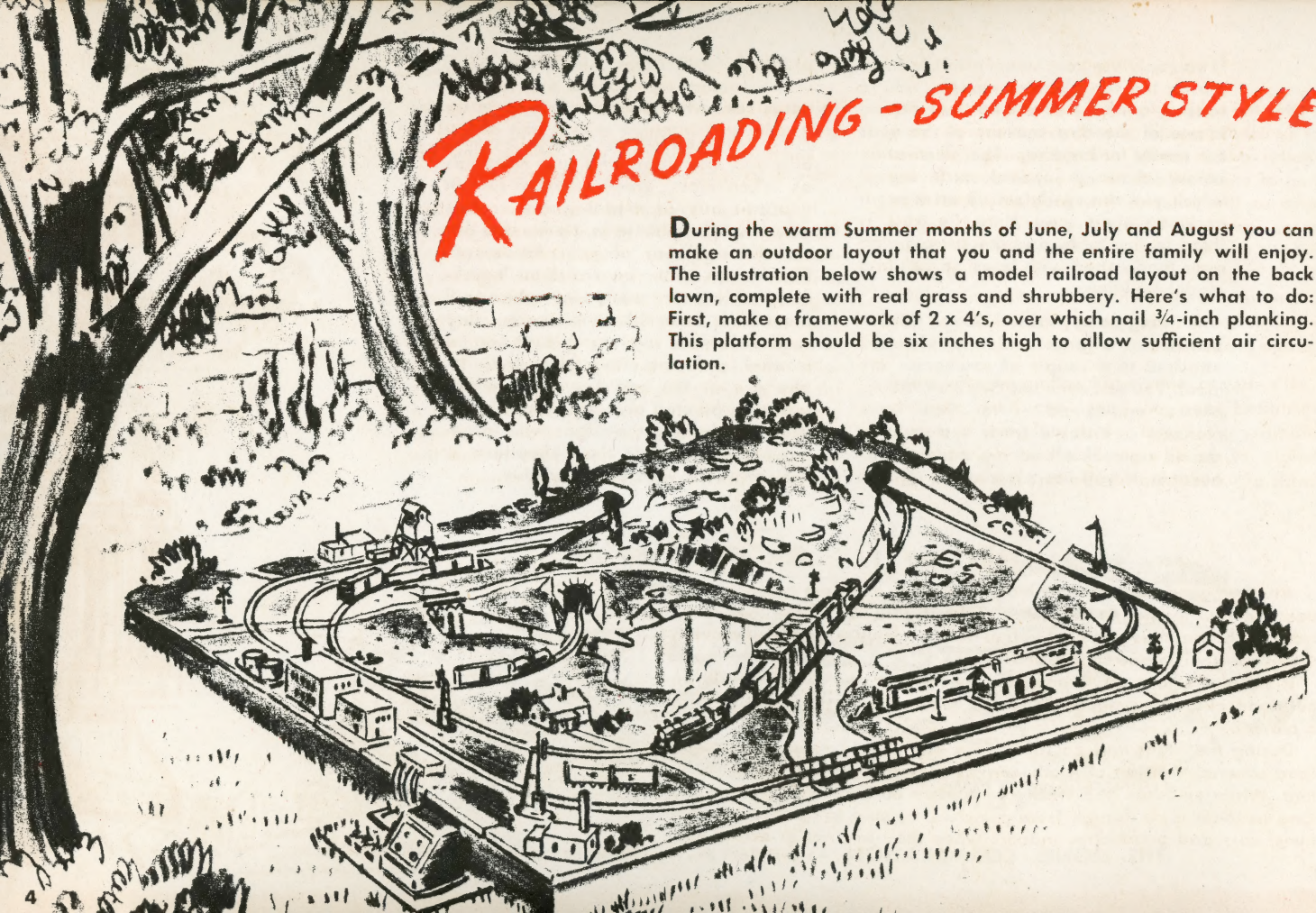
A ping-pong table, long garden benches or a large section of plywood attached to a couple of sawhorses are ideal. You can even use two card tables, placed end-to-end. After you have planned a suitable track system, you should conceal all wiring as much as possible. If you use plywood or ¾-inch planking, drill holes beside the track and accessory connections and run the wires beneath the layout.

For scenic effects use burlap to create hills and mountains and such materials as lichen moss, green sawdust (which you can buy in model stores), coffee grounds, sponges, twigs, stones and dirt for the texturing of your landscape. Gravel can either be scattered loosely or sprinkled over wet paint, which will prevent it from blowing away. And realistic brooks, rivers and lakes can be created by laying either glass or Cellophane over the board surface, which has been painted blue. The glass should be secured along the edges with large-headed nails, while the Cellophane is best attached with ordinary glue.



RAILROADING - SUMMER STYLE

During the warm Summer months of June, July and August you can make an outdoor layout that you and the entire family will enjoy. The illustration below shows a model railroad layout on the back lawn, complete with real grass and shrubbery. Here's what to do: First, make a framework of 2 x 4's, over which nail ¾-inch planking. This platform should be six inches high to allow sufficient air circulation.



After the track is laid (be sure you have plenty of switches for sidings and reverse curves!) your model road is ready for landscaping. The creation of scenic effects on an out-of-doors layout such as this presents few problems. Real dirt, moss and small-leaved plants like Baby's Breath you can probably find near the house. There are an almost infinite variety of other plants and weeds which, after they are planted, will never grow too big for "027" or "0" gauge proportions.

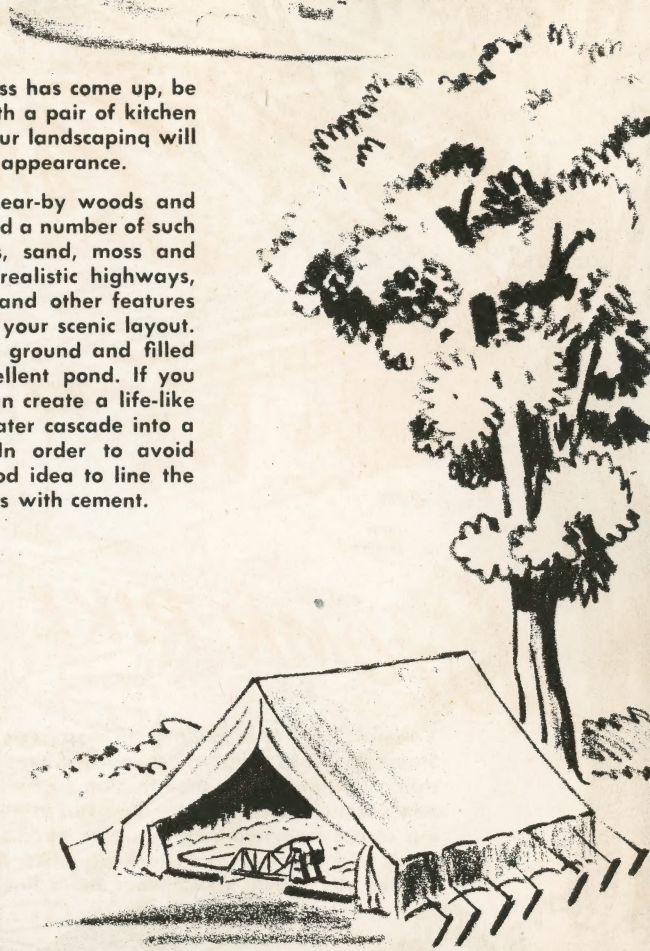
It's easy to make wide, rolling meadows and farmland area on your layout by planting ordinary grass seed, which will grow to a *scale* height of six or eight feet and resemble the fields of wheat and alfalfa through which real railroads run. After the grass has come up, be sure to keep it trimmed with a pair of kitchen or sewing shears or else your landscaping will have a scraggly, unkempt appearance.

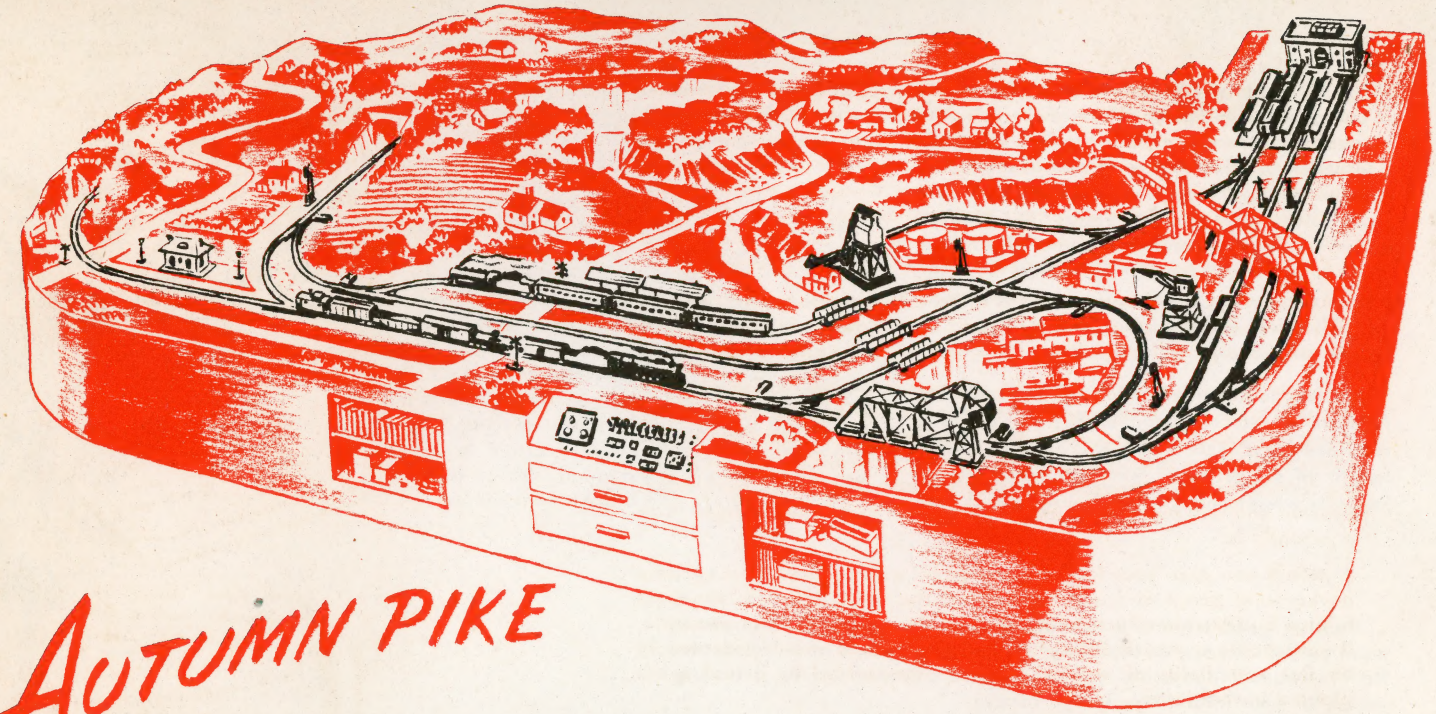
If you hunt around in near-by woods and fields you will be able to find a number of such natural materials as twigs, sand, moss and pebbles which will make realistic highways, hedges, sand pits, forests and other features you will want to include in your scenic layout. A large pan sunk into the ground and filled with water makes an excellent pond. If you tilt the pan slightly you can create a life-like waterfall by having the water cascade into a scooped-out stream bed. In order to avoid seepage, though, it's a good idea to line the miniature ponds and brooks with cement.

Another good scheme is to make a stream overflow at an outside point on your layout. At the source of the stream run a hose connection from the house, thus enabling you to have a constant supply of moving water for your inland canals and brooks.

If you don't have any lumber for your layout you can still build an out-door railroad by mounding up the earth six or eight inches to form a plateau.

During the night and on rainy days you should keep your model road covered with an oil cloth, canvas tarpaulin or, still better, a fly tent. While switches and track can remain outdoors all Summer, as long as there is no danger from prowlers, be sure to remove locomotives, cars and accessories indoors when they are not in actual use.





AUTUMN PIKE

Towards the end of Summer, in most parts of the United States, the days begin to get cool and the nights become chilly. That means it's time to plan a new layout—and a new location. Some of your best fun in model railroading comes from working-out new track schemes, new yards and exciting new track activities. After Summer is over you should revise your main line and sidings. Maybe you'll want different track levels; it's always fun to watch one train pass over another, going in opposite directions. Undoubtedly you'll want to revise your water routes and your fields and mountains. First, you must find a dry, roomy location that has good lighting. There are all sorts of possibilities: the attic, the cellar or an unused bedroom. One side of a double garage is ideal.

Since this is a Fall layout, let's make a real Autumn scene! That means lots of color and a few new materials. Mountains of startling realism can be made by tacking window screen or 1/4-inch mesh wire over a rough wooden framework and covering it with either plaster or papier maché. Or, a simpler and nearly as effective mountain can be made by nailing crumpled brown paper to a similar framework. After the form has been prepared, cold-water paint should be applied with a two-inch brush. An artist's water color brush is handy for details.

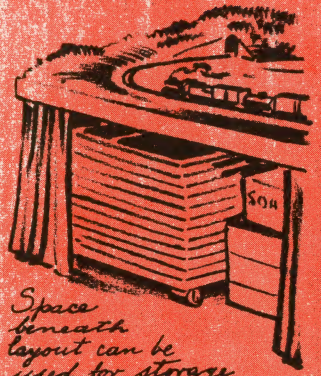
Another way to achieve an earthy effect is to sprinkle green sawdust, coffee grounds, fine stone and moss over brown paper or burlap which has previously been prepared with a coat of wall sizing or glue.

If your layout is close to the wall, you can obtain an illusion of great distance and add immeasurably to the realism of your railroad by using a painted background of hills, mountains and sky. Most model stores carry these panoramas in stock and choices include scenes showing forests, prairies, mountains and farmlands. They're all fairly inexpensive and will make your model pike seem to be much larger than it actually is.

Before you plan your layout it would be well to pick out a suitable background panel and, on the basis of the scene selected, construct foliage and terrain effects to blend with the panorama. For example, if you choose a prairie background, your railroad countryside would be flat with fields of waving "grain" represented by actual grass planted in real loam.

A panel showing rocky crags and snow-capped peaks would, of course, be set against a layout of mountains and valleys. An ocean scene would provide a good opportunity to build a seacoast railway complete with docks, model freighters and liners and pier-side warehouses.

The color overtones should represent the spirit of Fall and should primarily be displayed in such natural scenery as trees and shrubs.



Space beneath layout can be used for storage

You can have an illuminated train indicator board

Put up a painted scenic back drop for your layout.

SNOW SCENE-FOR WINTER

Here's a new idea for the cold months of the year: a Winter snow scene! You've all seen a real locomotive chuffing along through a snow-covered countryside, hauling a long string of cars. On each side of the tracks the fields and rolling hills lay buried under a frosty, white blanket; only the fir and spruce trees showed patches of green through their Winter covering. In the distance the jagged mountains reared their great bulk into the sky, giving the scene an air of enchantment and magic.

Wouldn't you like to duplicate a picture like that right in your own home with your own railroad layout? All you need is a little patience, a few simple materials and a suitable location. If your attic or garage is heated, either place would make an ideal spot. Otherwise, set up your table in an out-of-the-way corner of the cellar or, better yet, a spare room.

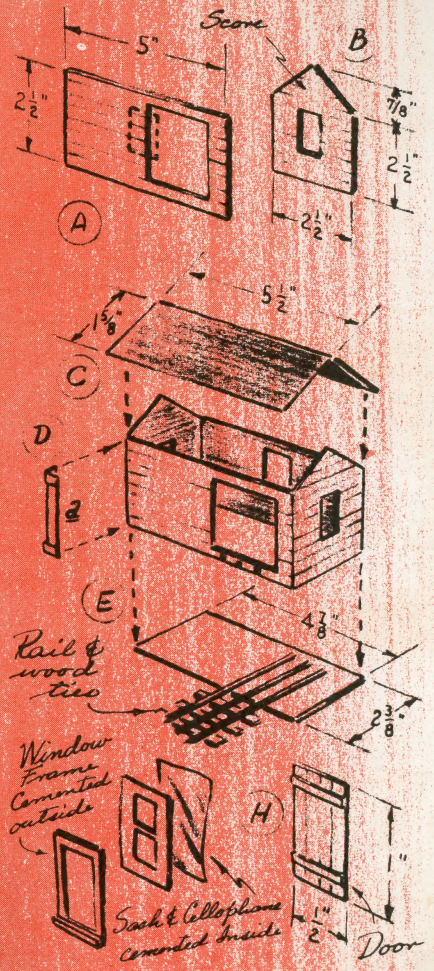
Before you lay your tracks on the roadbed, crumple old newspaper into the shape of mountains and spot them around the center of the layout. Then spread white cloth — old sheets, if your Mother has them, or white, unbleached muslin — over the entire table. If you have done this with care, your cloth-covered newspaper will already resemble snow-covered mountains. Now you can attach your tracks to the table. If you'd like to duplicate the sort of railroad scene you'd see in Colorado, California or Washington, have your roadbed wind through a valley, made by staggering the location of the mountains on either side of the track.

In order to show where the snow has thawed, leaving patches of bare ground, scatter coffee grounds, gravel or sawdust on sections of the cloth which have been lightly coated with glue.

No Winter scene is complete without trees and, in addition to evergreens . . . which you can make with twigs from Pine, Spruce or Firs . . . you should have other varieties well represented. Ordinary twigs make realistic-looking trees, without foliage, and plastic wood, molded around the base, will hold the "tree" securely to the layout while at the same time simulating roots entering the ground. Sponges, colored green with Tintex dye and trimmed to shape, also make interesting shrubs and hedges such as you might see in Winter.

After the trees have been made, sprinkle them with artificial snow of the sort used at Christmas time. A little glue sizing will keep it on. For your model houses, barns and stations you can make life-like icicles by twisting small pieces of Cellophane, dipping them into a solution of sodium silicate (water glass) and gluing them to the eaves. The roofs can then be covered with artificial snow.

With this Winter layout you can make a fascinating night time scene by spotting low-wattage blue lights around the table before the room lights are darkened. If you've never tried this, the effect of these tiny bulbs plus the headlamp of the locomotive and the station lights will give you a new thrill in model railroading.



LET'S MAKE MODELS!

One of the chief sources of delight in model railroading comes from the fun that can be had constructing model houses, tool sheds, diners, water towers, warehouses and other buildings, without which your pike can never achieve absolute realism.

On page 11 are illustrated a number of such models which can be inexpensively made from cardboard and similar materials. Although care, time and patience are required to construct these replicas, your efforts will be richly rewarded.

The diagrams on the left side of this page show the various steps in making one typical model building: a section shed. Once you have completed this, carefully following the step-by-step drawings, you will have little difficulty making other models, all of which involve the same general construction principles.

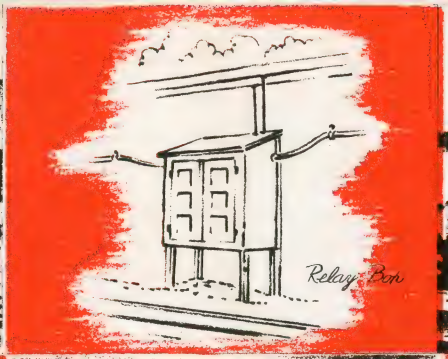
Artist's illustration board, which can readily be cut with a sharp knife or single edge razor blade, is the best material to use for walls, floor, roof and other major parts. Bristol board, preferably 1-ply or 3-ply, is excellent for trim, windows and sills. Both of these materials can be procured from artist supply stores. If neither is available, good grades of hard-textured cardboard may be used, provided its thickness is at least 1/16-inch.

The sketches on this page show the appearance and size of the sides (A) and the ends (B). The ends are exactly alike; the sides differ somewhat, since one has a door, the other a window. The three windows are centered and measure 1 x 1/2-inches, with a distance of 3/4-inch from the sill to the floor. The door (A) is 2-inches square and should be cut so that 1/8-inch is left at the bottom. The window, indicated by dotted lines, shows the position it will occupy on the opposite wall. After the walls have been laid out in pencil on the illustration board, the siding should be scored with a dull knife or blunt instrument. When the building is later painted the scoring will show up as clapboards and add realism to the finished model.

Drawing C shows the roof which, before bending, measures 5 1/2 x 3 1/4-inches and is scored down the middle to facilitate folding at the peak.

After the sides, ends, roof and openings have been cut, the sections can be glued together — first, the ends to the sides and then the roof to the four walls. Several elastic bands will hold the parts in place until the glue has thoroughly set. Thin, 1/4-inch-wide strips of wood, cut to fit the inside corners, will provide reinforcement and greater gluing surface. Make sure all parts are square and true before the glue hardens.

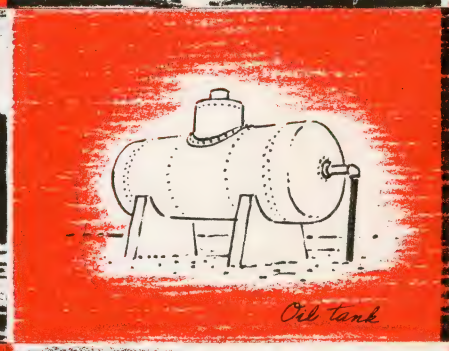

Section Shed


Relay Box


Pump House

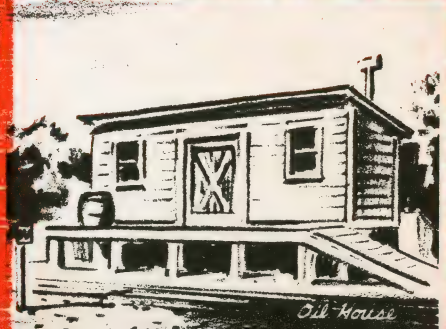

tool Box

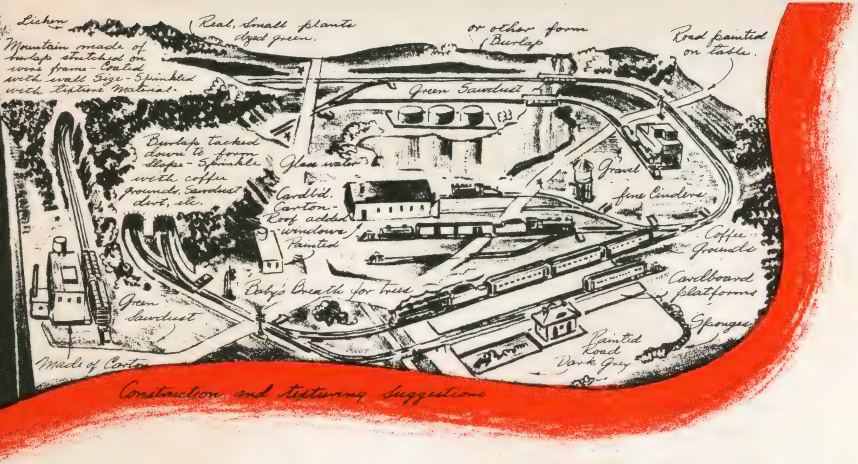

Sand House


Oil tank


Section Gangs Camp


Signal Relay House


Oil House



In order to simulate a cement floor, which an actual section shed would have, cut a piece of illustration board 4 7/8 x 2 3/8-inches, paint a concrete gray, and glue it to the standing model.

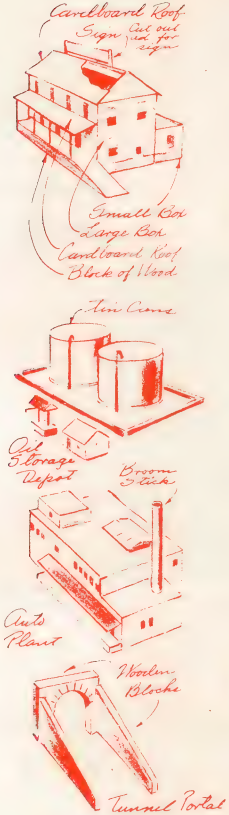
At this point, the bottom of the door should be notched on each side and in the middle to permit tracks to run inside the building, as shown in E.

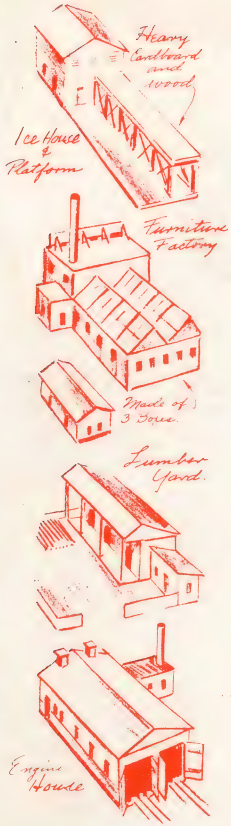
Double-hung windows, with an upper and lower sash, are cut from 3-ply Bristol board (or any material thinner than the walls) and are glued in place in the openings. Around the upper and lower sashes and the section out of which they are cut there should be a 1/16-inch margin.

Real, clapboard section sheds use corner boards at each of the four corners, for the double purpose of providing weatherproofing and serving as trim. Corner boards for our model are cut 1/4-inch wide, 2 1/2-inches long and across the top and bottom 1/8-inch strips of Bristol board are glued. Next, the section is scored down the middle and folded to make a 90-degree angle, after which it is attached to the corner, as indicated by "a" in Figure D.

Following this, two doors must be made for the large opening. (See drawing 1, Page 11.) Each door, which is made from Bristol board, measures 1 x 2-inches, has braces (either horizontal or crossed) and is lightly scored on both sides to represent boarding. Glue them in place so that they look like the sketch.

Your model is now nearly complete. But, since it is a section shed, you will need tracks, which run inside the shed to make the removal of heavy equipment easier. It is simpler and more effective to use Lionel "0" or "027" gauge track, and switch onto the main line but, if you wish, you can make your own rails and ties, as shown on Page 10. The ties, cut out of wood, should meas-





ure 2¼-inches long, 3/16-inch wide and 1/8-inch thick. Rails are actual Lionel rails, made from discarded track. Glue the ties to a cardboard base, scatter stones, gravel and twigs and you will have a realistic roadbed. An added touch are a few wooden barrels, made from ¼-inch sections of ½-inch round wood, on which staves are painted. They should be placed near the section shed.

The final step in the completion of your shed is, of course, the painting. Although the color you select is up to yourself, you should not attempt to use anything but flat paints—which contain no gloss.

The model houses, sheds, tanks and boxes illustrated on Page 11 are all patterned generally after the section shed and use the same materials.

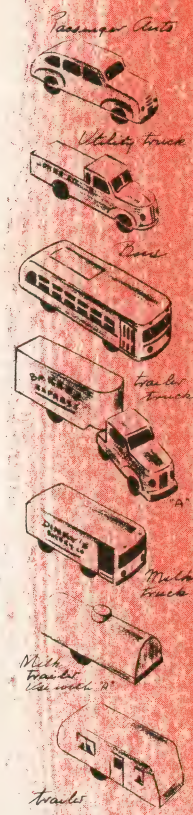
The sketches along the margins of pages 12 and 13 illustrate industrial plants similar to those served by real railroads. So simple to make that two or three can easily be finished in an evening, these models are nevertheless highly effective.

The basic construction principle involves varying-sized cartons and boxes which, when glued together and embellished with smoke stacks, skylights, platforms, etc., form a realistic factory or warehouse.

For example, Fig. 1 shows a packing plant consisting of a carton approximately (measurements need not be exact) 20 x 10 x 10-inches to which a smaller box (roughly 6 x 6 x 8) has been glued. Added to this basic structure is a loading platform (a single block of wood) protected by a slanting roof. A rectangular piece of cardboard, scored, folded and supported by two triangular-shaped end sections completes the roof. A billboard attached to the peak, after which the plant is either sprayed or brush painted, finishes the project.

Each of the vehicles illustrated on page 12 is carved from a solid block of soft wood, preferably Pine. The body for the passenger car in Fig. 1 is a block measuring 4 x 1¼ x 1¼-inches, cut with a coping saw. The hood, top, rear slope and all edges are filed and sandpapered to provide a smooth finish, after which a dowel, ⅝-inch in diameter and 1⅛-inches long is split in half to form the lower portion of the wheels. Use a strong wood glue to attach them to the body.

Such parts as windows, upper halves of wheels, outline of hood, fenders, bumpers and grillwork are painted in black; headlights should be spotted in white.



GAMES

TO PLAY

Not all of us realize that there is more to model railroading than building a layout, constructing bridges, tunnels and warehouses and operating our train around a track system.

Some of the best fun in your miniature pike will come from playing a number of fascinating games based on real railroad practices and incidents. In the following pages four of these games are explained in detail. Some of them pose freight and scheduling problems similar to those encountered by the Pennsylvania Railroad, the New York Central, the Southern Pacific and other big lines. Others are adapted from real-life events and legends that have grown out of the rich history of American railroading.

All of these games contain enough flexibility so that they can be worked out in a variety of ways. For instance, the scheduled freight runs outlined in the Map Game can be altered to provide an almost endless number of combinations. Instead of routing your train from Chicago to San Francisco to Seattle, making pick-ups and dropping cars at each stop, you might work out a run from Miami to Pittsburgh to Dallas, requiring your train to perform entirely different functions.

FASCINATING MAP GAME

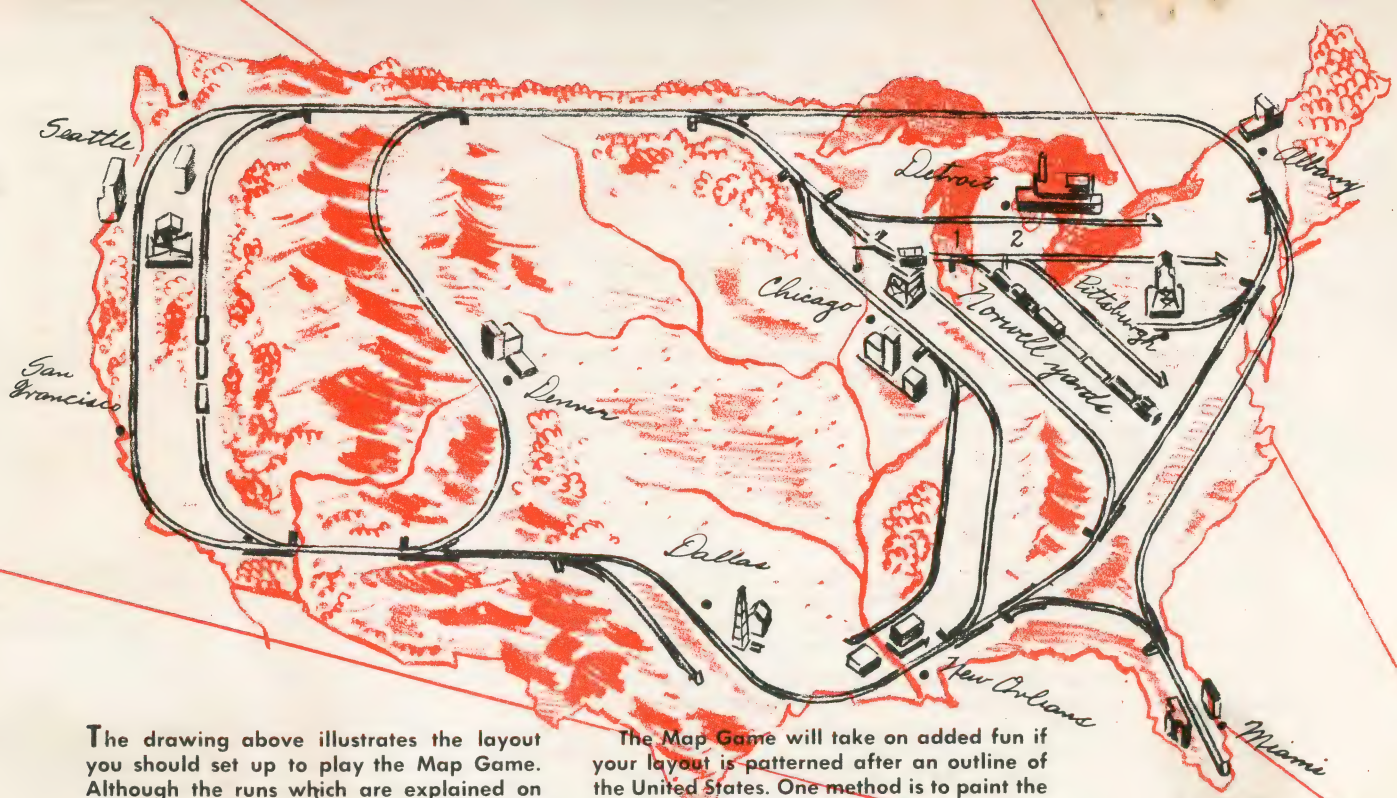
Here's a game that will show you how to operate your model layout like a real railroad, making freight runs to certain cities to pick up specified loads and hauling the cars to other cities to discharge the cargo. Although the directions below indicate two complete trains, the game can be played with only one locomotive and tender plus at least seven assorted freight cars.

The various runs have purposely been made simple, but after you have become familiar with scheduling, issuing train orders and shunting cars to desired locations, you should plan your own runs.

Make up time tables and train orders (see page 17) and devise intricate runs which involve a good deal of actual loading with automatic accessories, reversal of train directions, sidetracking and car spotting. You and your friends can take turns being engineer, dispatcher, yard master, station agent and switchman.

First run: Train #1 leaves Siding 1 at Norwell and proceeds to Chicago, where it picks up a load of scrap metal from the electro-magnetic crane and drops off a flat car on the siding. The train then runs to Denver where a cargo of meat and cold storage eggs are loaded on and, leaving Denver, proceeds to San Francisco where it picks up three gondola cars of crude rubber which had previously been spotted on Siding B.

From San Francisco the train goes to Seattle, at which point the two lumber cars are loaded with timber. Leaving Seattle, the train returns to Chicago, picks up the flat car, now filled with iron pipe, on Siding A, and returns to the Norwell yards.



The drawing above illustrates the layout you should set up to play the Map Game. Although the runs which are explained on the preceding and following pages are based on this track system, you can easily revise the routes to fit any track plan you wish. If you lack the switches and rails to include all of the sidings, for instance, or if you don't yet have some of the accessories, you will have to alter the train orders accordingly.

The Map Game will take on added fun if your layout is patterned after an outline of the United States. One method is to paint the border on a sheet of beaver board or brown wrapping paper large enough to cover your layout. It is not necessary to indicate state outlines, since the model is not built to scale, but you should include such distinguishing features as the Rocky and Sierra Nevada Mountains and the Mississippi River.

Second run: Train #2 leaves Siding 2 and, in order to simulate a trip of several miles, makes seven complete circuits of the layout, proceeding in turn past Chicago, Seattle, San Francisco, Dallas, New Orleans and Pittsburgh. Following this, the train halts at Pittsburgh where two coal cars are filled from the automatic coal elevator.

After the train leaves Pittsburgh, a special order is received to stop at Albany for 23 seconds while the locomative takes on water and coal. Train departs from Albany and heads for New Orleans, via Denver, San Francisco, Seattle and Chicago. At New Orleans the train picks up a carload of frozen fish and drops off the two coal cars on Siding C.

At this point, the Forge Motor Company in Detroit sends your railroad an order to pick up two flat cars loaded with cotton, which have previously been spotted in Miami. This order is transmitted by your dispatcher to Train #2 when the Norwell station agent communicates with the New Orleans station agent.

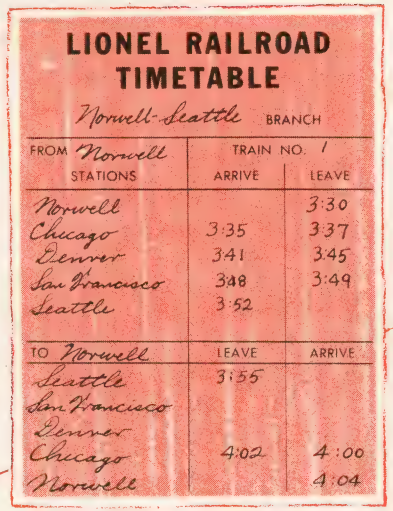
On receipt of the order, the train departs for Miami via Chicago, Seattle, San Francisco and Dallas. After the car is coupled on at Miami the return is made to Detroit, using the shortest possible route. The Forge Motor Company has also stipulated in its order that the train must be backed into the track bordering its plant, for unloading purposes. After the train remains at Detroit for 45 seconds while the cars are emptied, it returns to Siding 2 in the Norwell yards.

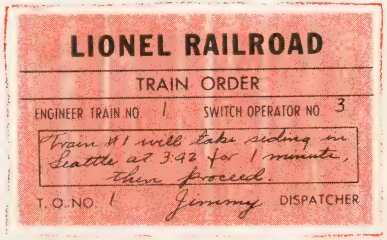
Third run: In Pittsburgh the Briteburn Coal Company sends an urgent order to your dispatcher in Norwell stating that a shipload of steel is to be picked up in Chicago, two cars of ore are awaiting shipment in Denver and four box cars are to be picked up in Seattle.

Because of unloading restrictions at the Briteburn plant the box cars from Seattle must be coupled to the tender, the gondola cars of steel from Chicago must be directly behind the box cars and the ore cars from Denver are to be immediately ahead of the caboose. The entire trip must be made in 3 minutes, 15 seconds and in each case your train must take the shortest route.

A further complication is added when the engineer receives a special order, while his train is halted at Denver, to pick up a coal car at Miami before he proceeds to Seattle. This car is also to be unloaded at Pittsburgh and must be spotted between the second and third box car.

These train runs will give you an idea of the fun that can be had with the Map Game. After you have made these trips, carefully following the orders, you can devise new routes for your freights, making them as complicated or as simple as you wish.





MYSTERY OF THE GOLD SHIPMENT

One wild, rainy night in September, Engineer Hank Johnson is given special orders to take a shipment of freight to Leadville, a small mining town in Colorado.

"Better take extra good care of this one," the Dispatcher warns Hank. "One of the cars has a valuable load."

At exactly 10:04 P.M. the long freight clears the Cactus Junction yards and, 18 miles beyond, starts its mountain run. Suddenly the cab phone crackles with terse orders from Cactus Junction. The main line bridge has been dynamited! Johnson is instructed ta take the old route (Track A; see diagram) that winds over the rugged Smoky Range to the abandoned town of Silver Creek.

Somehow, puffing and straining up the steep mountain, the freight makes the climb. And then, at Silver Creek, Hank Johnson faces a new problem. The extension track that leads to the station is too short!

In order to deliver his freight, Johnson splits the train and shunts half of the cars to the downward siding of the "Y", on track D. The rest of the train is left on track A.

Following this, Johnson returns to B, backs into A, couples onto the remaining cars, pulls up into B and, from there, backs into track C. At this point the engineer returns to D, picks up the first half of the train, pulls ahead until he clears the switch and then backs up until he couples to the cars on C.

Hank Johnson's train is now complete on track C and, moving cautiously, he backs down the mountain until he reaches the main line at E. A half hour later his train chuffs into Leadville, where it is unloaded.

By the time the last car is emptied, the Cactus Junction Dispatcher sends a message to the engineer, telling him that a temporary span has been thrown over the river.

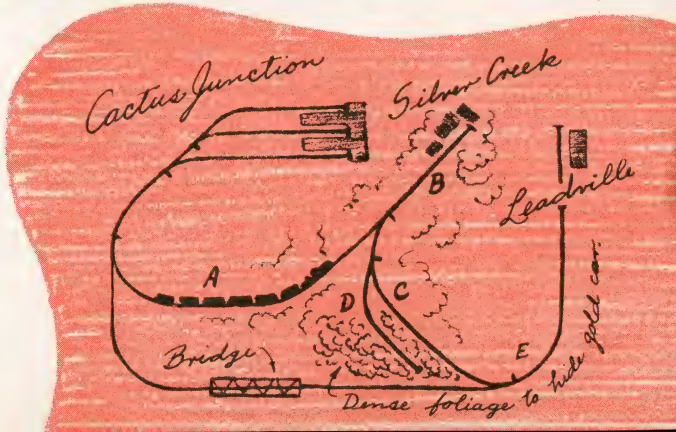
The sun is high in the morning sky when Hank Johnson's train pulls into the Cactus Junction terminal. "Well done, boys," the Dispatcher calls out to the crew.

But a half hour later the engineer, fireman and train crew are called to the front office. "Johnson," the Dispatcher says curtly, "that train you took to Leadville included a car containing a $1,000,000 in gold bullion. The car is gone. Four armed guards who were aboard it are missing. Know anything about it?"

Neither Johnson nor any of the crew can furnish clues or information. That same day county and federal agents find the missing car, hidden by bushes in a ravine below siding D. Lying on its side, the car has been stripped of its valuable load. All of the guards have been killed.

The following week government detectives track down the notorious bandit "Killer" Hackett, who admits that, with his gang of bandits, he had shot the guards, uncoupled the gold car and, using a jack, had tumbled it into the ravine. He also boasts about blowing up the bridge to force re-routing the gold via Silver Creek.

Here's how you can work out an actual train robbery! Just follow the action above, using the diagram. In order to fool your friends, make sure you spot the gold car in the middle of the train so it will be the last one on D, where dense model foliage will conceal it.



RUNAWAY WILDCAT

One of the most incredible and exciting incidents of modern railroading was an unscheduled run which is still talked about by old-timers in bunkhouses from Maine to California.

The story concerns a runaway switch engine in a small Western town which, after what happened, was later dubbed "Wildcat Pike".

It was a cold, wintry morning when Engineer Bill Williams eased Number 1026 out of the roundhouse and took the powerful little yard goat over to a siding, where it was coaled and watered. A half hour before it was slated to shunt some coal cars to the elevator for loading, the switcher stood on an outbound track with a full head of steam.

Together with his fireman, "Smoky Joe" McGregor, Bill Williams went into the yard hash house and ordered some hot coffee. Suddenly Williams glanced out of the window and what he saw caused him to leap from his seat. Number 1026 was moving down the track — a runaway!

Later it was discovered that the cylinder petcocks had inadvertently been left closed and steam, leaking into the cylinders, had started the engine on its amazing trip.

The vibration of the locomotive opened the throttle even further and soon the little switcher was rocking along at break-neck speed. Collisions were averted by hair-breadth margins. Luckily there were a number of switches and time and again the runaway wildcat was re-routed to avoid crashing into cars or other engines.

With no one to fire its boilers, the locomotive eventually slowed down and came to a halt on a long spur.

THE GAME: It would take too many switches and too much track to duplicate exactly the actual trip of the real-life yard goat so, for purposes of simplification, follow the track diagram to play the game.

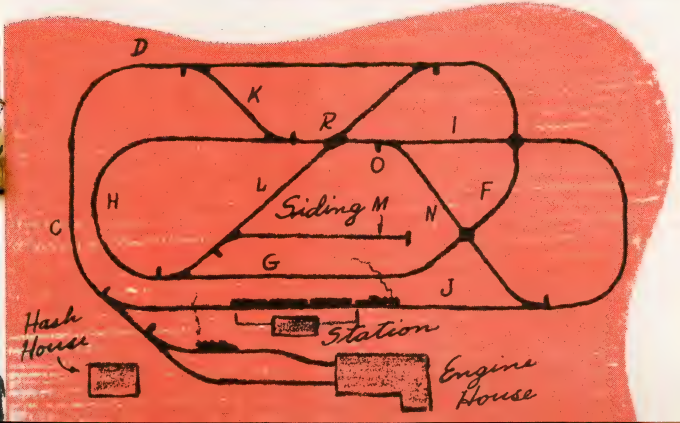
At the start of the activity, a passenger train is standing at the station on track J, waiting for a signal to proceed. Meanwhile, the yard engine starts out from the storage track and, maintaining a constant speed, is routed by the two switchmen over tracks C, D and F. When it reaches G the engineer of the passenger train is given the clear signal and heads for track I.

If the passenger and the goat both hold to I there will obviously be a collision. Therefore, the timing of the game demands that the wildcat loco will have reached switch O first so that it can be routed along N.

Continuing, the runaway hits the open switch at the foot of N and rolls along to I. At this point the passenger engineer, whose train has been routed to H and L, is halted at the crossover to give the goat clear track.

While the runaway is this time routed on the outbound K track to D, C and J, the passenger train resumes its run, proceeds over the intersection and around to track F, G, H and I. Now it is the scheduled train's turn to be routed on N to avoid a smash-up with the runaway.

The game can be ended at any time and at any point, since your wildcat eventually runs out of "steam."



THE PRESIDENT'S TRAIN

This is a game which you and your friends can work out by means of the directions and diagrams below. After it is finished you are to guess why the President of the United States made this special trip. None of your friends must know the answer when you start the game; they are to make a deduction from the clues and action. Here's the plot:

The President is scheduled to make a very important trip to a certain western state. F. B. I. men and Secret Service chiefs map out every move and inform the railroad company where and when to have its trains ready.

Keeping this in mind, you must select four boys for the game. Their titles and functions are as follows:

1. F. B. I. Agent: The planner of the game, he is the only person who knows the reasons for the trip. He should be the owner of the layout.
2. Road Engineer: He operates the train on the mainline.
3. Yard Engineer: He makes up the trains, operates them in the yard area and dispatches them.
4. Tower Man: He operates switches Nos. 1, 2, 3, 4, 5 and 6. He also uncouples and unloads the cars.

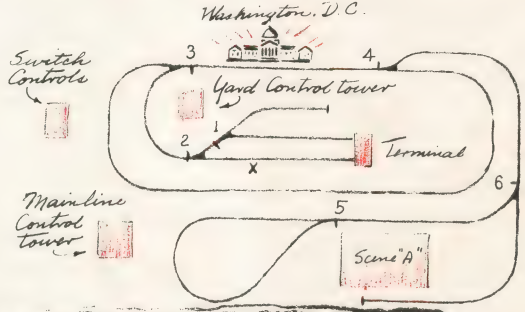
Every player has comething to do. First, the F.B.I. Agent issues secret orders, based on the information given below. These orders must not be shared.

Then the Yard Engineer makes up Train No. 1, which consists of a locomotive, tender, box car and two passenger cars. This train waits on track X.

Next, the Tower Man clears the tracks and opens the switches for Train No. 1 to proceed onto the main line, after which its movements are controlled by the Road Engineer.

When the Road Engineer runs the train around the loop several times (to represent a 20-mile trip) he stops the train at Scene A. This scene is a roughly-sketched map which you should copy from the drawing below. During the halt, imaginary surveyors get off the train and set up cable cars.

Immediately after this, the train returns to the terminal. Next, the Yard Engineer dispatches three more trains in succession to Scene A. Train No. 2, the first to leave, comprises a locomotive, tender,

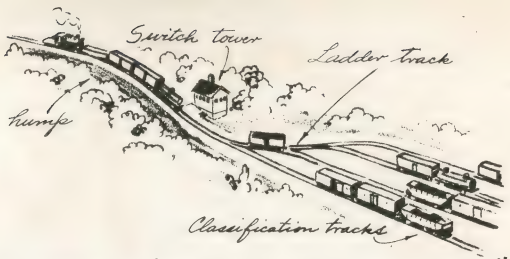


two flat cars loaded with logs, another flat car filled with iron pipes and a gondola car containing sand. After it makes its run to Scene A it returns to the terminal and Train No. 3 departs.

This train is also a freight, consisting of four gondola cars carrying bags marked "cement." After No. 3 returns to the terminal, Train No. 4, "The President's Special," starts out. After traveling around the circuit a few times, it halts at Scene A, where imaginary bands are playing and a crowd is gathered. Later the train returns to the terminal.

Here are all the clues you need to know. Take special note of Scene A and remember that the freights carried surveyors, construction men, sand, cement, timber and iron pipe.

The Answer: The President was making an inspection trip to a new dam, which was under construction. If you look closely, you will see that the map shows a river located in a deep gorge. The various trains carried men and materials necessary to build the dam. Now plan the game and play it.



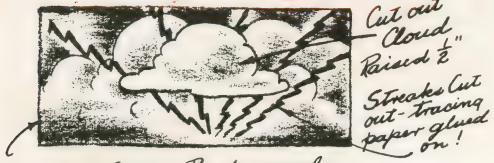
In addition to these imaginary games, many railroad operations are in themselves a game with which you can have a lot of fun. For example, in most railroad yards it is a common practice to "hump" cars. That is, a string of cars is pushed onto a high point of ground and then either single cars or groups are cut loose and allowed to coast down the other side onto a "ladder track" that branches out into several sidings. Rolling under their own momentum, the cars are thus sorted out by a switchman onto separate tracks. This action is not as easy as it sounds and to become skillful may take you a little time.

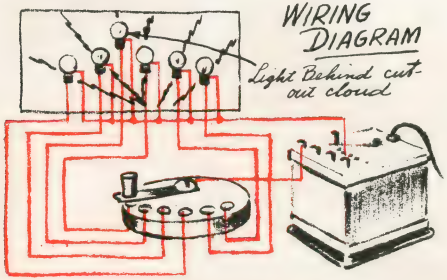
Of course, you must never lift the locomotive or any of the cars from the track in order to move them to another part of the layout. If you want to put the middle car of one train in the middle of another, make the change by "breaking" each train and shunting the cars to sidings, where they will be out of the way until you need them.

Scaled-down time will help a lot in arranging schedules. Take a real timetable, alter the hours and minutes to minutes and seconds and then operate your train according to this table.

MODEL MAGIC

EXCITING THUNDER STORMS!





How would you like to arrange your layout so that you could run your train through a big thunderstorm, complete with lightning, storm clouds and sound effects? With a few easily-obtainable materials and a little work you can reproduce the exciting scene shown on Page 23.

If your model pike has a scenic background you can either alter it to resemble the one pictured here or else construct a new one. If you decide to build a new one, you should first make a wooden frame scaled to the length and height you want.

Next, stretch heavy brown wrapping paper over the frame, tack it in place and then paint a storm scene, using white for the clouds and deep blue or purple for the sky.

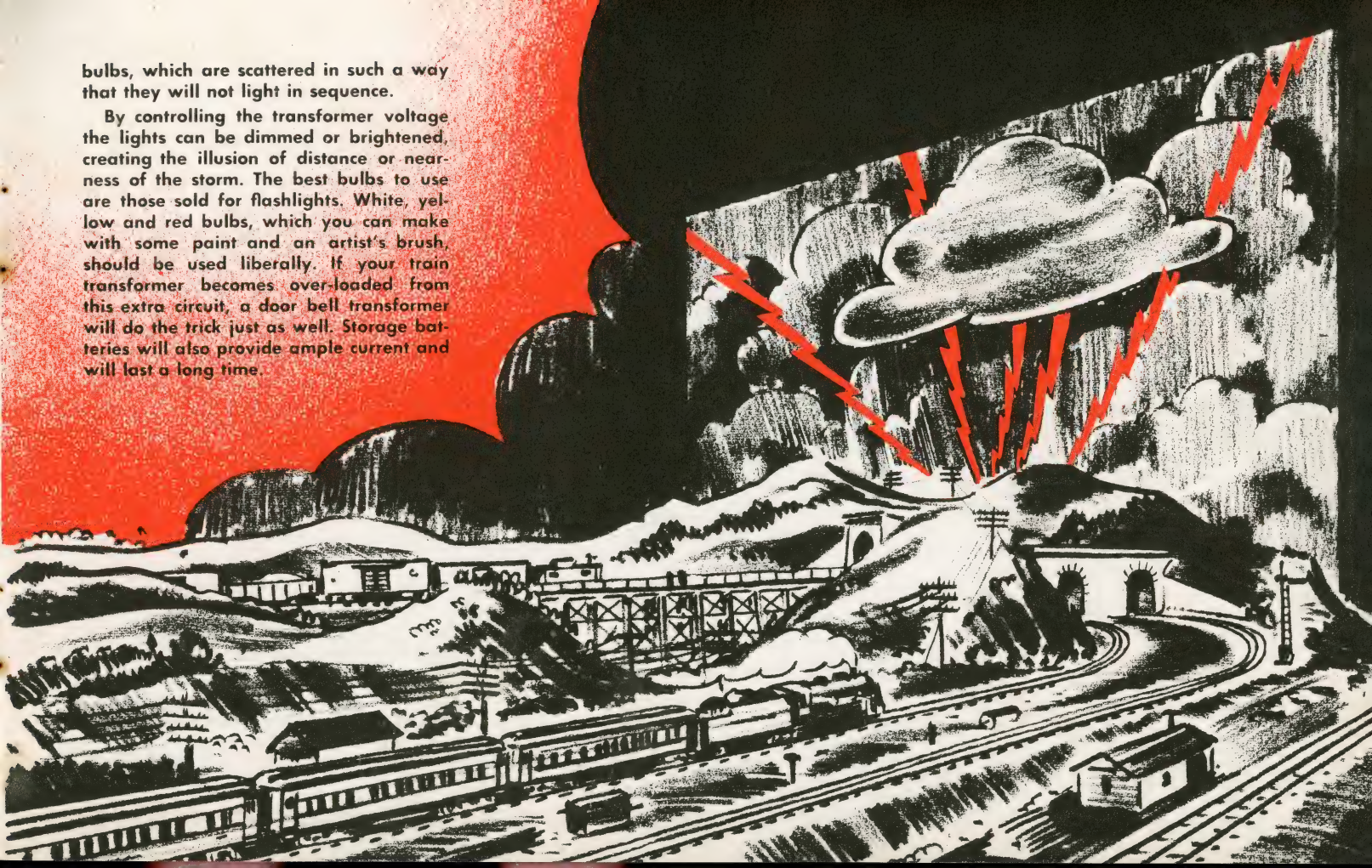
After this is completed, use a sharp knife to cut out jagged lightning streaks. Then glue thin sheets of transparent yellow tracing paper on the rear of each cut-out. Next, remove two or three clouds in the same manner and attach them to the panel in the position shown in the sketch. Lights are then arranged behind each lightning streak and between the cut-out clouds and the background.

The first step in the wiring operation is to build a hand-controlled switch. (See diagram.) Then wire the lights, using the sketch as a guide.

Pulling the switch handle across the contacts momentarily lights the storm

bulbs, which are scattered in such a way that they will not light in sequence.

By controlling the transformer voltage the lights can be dimmed or brightened, creating the illusion of distance or nearness of the storm. The best bulbs to use are those sold for flashlights. White, yellow and red bulbs, which you can make with some paint and an artist's brush, should be used liberally. If your train transformer becomes over-loaded from this extra circuit, a door bell transformer will do the trick just as well. Storage batteries will also provide ample current and will last a long time.



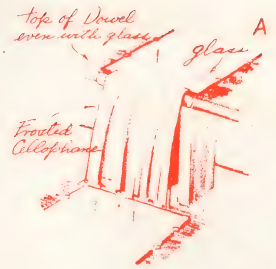
CASCADING WATER FALLS

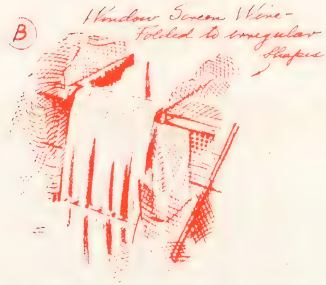
One of the most colorful and dramatic effects you can achieve in your model railroad scenery is a waterfall that creates the illusion of an actual cascade. Even on a layout of modest size a waterfall is a necessary adjunct to mountainous terrain and more than compensates for the effort required to make it.

Basically, the construction is similar to that of mountains: a rough wooden framework covered with wire, coated with plaster and embellished with shrubs, sand and stones. A revolving drum concealed in the frame makes the water appear in motion.

The series of sketches on page 25 explains the construction process. Fig. A shows a rough framework, (the height and width depends on the size of your layout) which creates an upper water level, brink, falls and lower water level. Before the glass is laid the tabletop should be painted where the stream bed will be. Make the center of the river a clear blue which progressively turns to deep blue, greenish blue and blackish green as you paint towards the bank. When the paint has dried, secure the glass by means of large-headed nails along the edges.

The brink of the falls is a $\frac{1}{4}$-inch dowel, painted to blend with the upper level water. The cascade is made of frosted Cellophane (translucent but not transparent) attached to the dowel, with enough overhang to reach the glass, by cellulose (model airplane) cement. Next, stretch the Cellophane taut to create vertical wrinkles, glue at the bottom to the frame and finish by securing with a wooden strip and tacks.





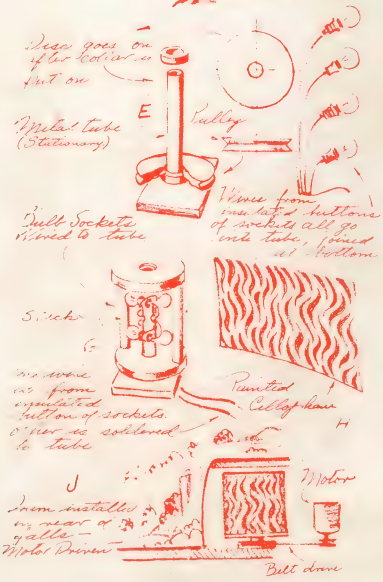


Fig. B shows how the model will look after sections of window screening, folded and bent to represent the rocky bank, are tacked in place.

In Fig. C the plaster, mixed to a heavy consistency (you can stretch the mixture by adding torn newspaper, although pure plaster is necessary for rock modeling) is applied to the screening. Carve in rock formations and gullies before the plaster sets, plant real stones and pebbles (most of them at the base of the falls) and allow at least three days for drying. Use flat oil paints for coloring—grayish brown for rock formations, green for grassy areas. While the paint is still wet sprinkle green sawdust (which you can buy in model stores) and coffee grounds, together with actual dirt, along the banks. Scatter sand near the base and glue patches of Lichen moss as indicated in Fig. D. Cotton, fluffed and pulled apart, represents foam.

The rotating drum which provides action for the falls is illustrated in Figs. E, F, G, H and J. Measurements will depend wholly on the size of the falls you construct.

The initial step involves setting a hollow metal tube, 3/8-inch in diameter, inside a collar and attaching both to a wooden stand. (Fig. E.) A pulley rests on the collar.

The light circuit (Fig. F.) uses 12 or 18 volt bulbs, hooked up as indicated, and operates either from wall outlet or battery, depending on the voltage supply.

Fig. G shows the lights attached to the vertical rod, into which holes have been drilled for the wires. The drum housing revolves around the vertical rod.

Cellophane, (Fig. H) striped as shown, is painted in blue, is then cemented tautly around the drum and anchored with tacks. At this point the power leads should be hooked up and the unit tested for lighting and revolving action. Added effectiveness is gained if some bulbs are painted yellow, others blue.

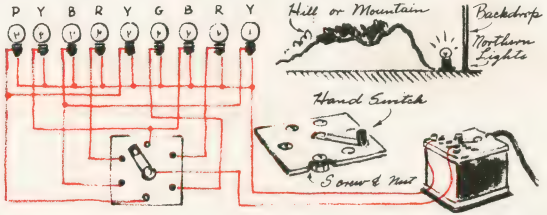
The final step is installing the drum (Fig. J.) and anchoring the motor.

MYSTERIOUS NORTHERN LIGHTS

A moonlight scene with flashing Northern Lights! *There's* a picture to stir your imagination! Here's what happens: as the room lights fade out, leaving only a small overhead blue bulb to represent the moon, the tiny windows of your model houses and stations make little patches of illumination in the gloom. Moving ahead on the green block signal light, your locomotive rocks along the mainline, hauling its string of lighted passenger cars. The powerful headlamp stabs into the darkness, picking out objects on both sides of the right-of-way. And in the northern sky the Aurora Borealis sends up a brilliant flood of light!

Using a large sheet of cardboard for your Northern Lights background, paint the sky a dark blue at the top. As you work towards the bottom progressively lighten the blue by mixing it with white paint so that the color shading resembles the drawing on the left. When the entire panel has been painted, punch holes in the cardboard to represent stars, cover them on the reverse side with transparent tracing paper and place colored flashlight bulbs behind each opening. Vertical and horizontal slits around each star make effective rays. Power leads for these bulbs can be connected to either a transformer or batteries. (See Page 22.)

The Northern Lights display is created by the use of colored lights concealed behind scenery and model buildings. The circuit below shows you how to make the connections.



TRICKS FOR YOUR LAYOUT

If a lake or ocean scene is part of your layout you'll certainly want to include a lighthouse with a real, flashing beacon to warn your model ships. The lighthouse should be located on a peninsula or, preferably, a small, rocky island in the water. Around the island you can obtain a wavy effect through the use of ripple glass while white streaks of paint on the underside of the glass will give the illusion of foaming water. After you have made the lighthouse of cardboard, attach a socket inside the beacon tower and splice the wires into your power circuit. A small thermostat will make the light flash alternately.

Sound effects, used with care, can give your model railroad an air of realism it is impossible to obtain otherwise. In most music stores you will be able to buy recordings of actual railroad sounds, of the variety used by radio and movie sound-effects men. These discs include locomotive whistles, the clackity-clack of speeding limiteds, the slow rumble of freights, the busy chuffing of yard goats and a score of other real railroad noises. If you have a record player, wire it to a loudspeaker concealed beneath your layout. Then your trains can perform functions to match the recorded sounds.

If you've ever taken many train trips, the chances are you've seen road gangs burning piles of old railroad ties along the right-of-way. This scene, as much a part of railroading as cookshacks, roundhouses and wooden trestles, can be duplicated in miniature. Whittle half-a-dozen wooden ties, keeping them to the proper scale size, and stain them black. Then cut some jagged flames from orange crepe paper and glue the bases to the underside of the ties. Conceal a red-and-yellow light under the crepe paper and wire it to a switch, as illustrated here.

It takes more than engineers and firemen, as you know, to run a railroad. One of the most important men is the station agent who performs a variety of functions. Unless your model line has at least two agents, you're missing a lot of fun. The best way to act out the role of station agent is to secure two or more doorbell buzzers, each one of which is concealed in a station. When the buzzers are wired to a push button, each boy can send dot-dash messages to another and receive replies in the same way. If you learn Morse Code you can have even more fun.


COME ALL!
SEE AND RUN
THE WORLDS LARGEST
LIONEL
MODEL RAILROAD
ADMISSION 33¢

LET'S FORM A CLUB!

How would you like to have a complete model railroad that included lots of track and switches, a number of locomotives and cars, extensive sidings, elaborate terminals and such exciting accessories as bascule bridges, coal elevators and lumber loaders?

Impractical? Not at all! It's no problem to have such a layout if you form a club with your friends—and it's loads of fun.

The obvious advantage of a club is that it offers an opportunity to pool equipment and share expenses while at the same time enabling members to build a realistic rail system.

Although a club can include any number of boys, you should have at least four members and preferably no more than ten. Suppose you launch a club with seven boys, each of whom owns a locomotive, tender, four freight or passenger cars, 12 sections of track and two pairs of switches. Immediately, when your club is organized, you can set up a layout with seven locomotives, 28 cars, 84 track sections and 14 pairs of switches. In addition to this you will probably have numerous items like block signals, crossing gates, water towers and magnetic cranes.

With such a foundation you can easily build a model railroad like many of those illustrated in this book. And with seven boys all contributing their share of time and work to make mountains, waterfalls, lakes, warehouses, roads, trees and other scenic effects, your layout can be a real masterpiece.

Naturally, no model pike can flourish and grow without funds—there will be expenses for the table layout and scenery, as well as new equipment later—but even a fairly elaborate road doesn't require a great deal of money.

There are a number of different and relatively painless ways to raise the necessary cash. One of the simplest is the payment of dues by each member. The amount would of course vary with the means of the boys, but even a modest sum like 15 cents a week would soon build into a sizeable balance over a period of months. One of the members should be appointed treasurer and either bank the money or keep it in a strong box. And there should be unanimous agreement among all members before any expenditures are made.

After the layout has been organized and set up with lots of mainline track, freight and passenger yards, rolling stock and interesting scenery, your club can hold a railroad show, charging nominal admission fee.

One such club, in Connecticut, holds an annual "Railroad Festival" in its club quarters. Members, variously dressed as conductors, engineers, brakemen and switch tenders, sell tickets, conduct tours and explain the workings of the system. Publicity for the event is gained through the local press, which carries a story and pictures a few days before the festival. This particular club has been so successful that its members are not taxed for dues; the annual show covers not only operating expenses but also provides for new cars, locos and track.

Often the hardest part of founding a club is locating a suitable spot. The best place is a garage, barn, cellar, loft or hen house. Maybe your school has an unused room large enough for a layout. Possibly there is a spot in your local Boy Scout headquarters.

Unless you are very lucky, the site will in all probability need a thorough cleaning. This is important, since dirt and dust are not only unhealthy but will also clog your locomotive and accessory motors. And don't forget that paint often works wonders! A couple of quarts of flat white applied to window trim, moldings and other points will give your clubroom added dash.

All that was needed to turn the cluttered garage (right) into a roomy, neat and up-to-date club were lumber, time and effort.

When you agree on a location, keep in mind the fact that your model road will undoubtedly expand and develop; don't crowd yourself so that future alteration or redesigning is impossible.

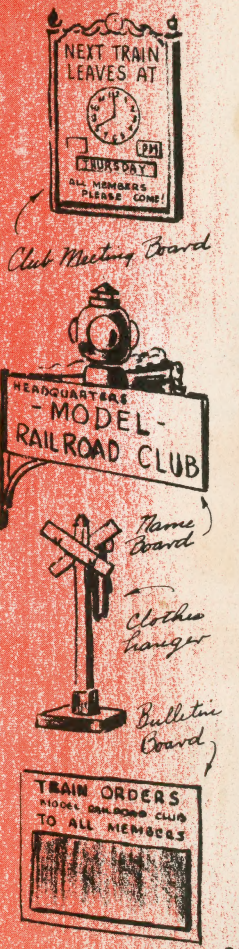
Since the most important part of the club is the model railroad, a considerable amount of time should be spent on a design for the track system and scenery features. At least a week should be allowed for this job. Give every member an outline and dimensions of the space available so that each boy can submit a plan.

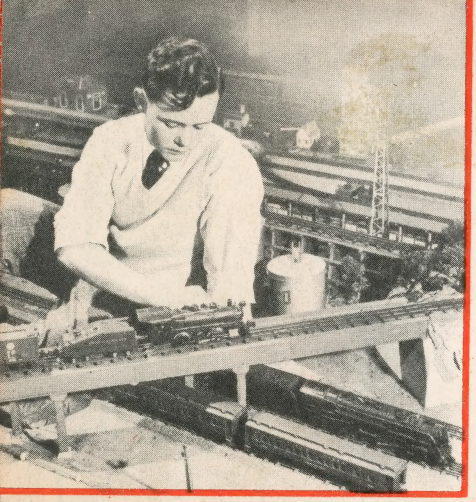
Naturally, the work should be divided to fit the talents of each member. Thus, boys with a knowledge of electricity would take charge of the wiring; those who are artistically bent would paint scenery and handle landscaping details.

Just like real railroads, a model pike is organized so that a number of persons is required for efficient operation. Hence, your road will have engineers, dispatchers, brakemen, towermen, yardmasters and yard flunkeys (who service rolling stock, keep engines oiled and cars cleaned). Although all of these positions are important, probably most boys would rather be an engineer or dispatcher than a brakeman (who operates switches, couples and uncouples cars and puts derailed locos and freights back on the track) or a flunkey.

For this reason, the duties should be rotated periodically. One system is to have a member progress successively from flunkey to engineer, holding each position in turn. After he has been an engineer for a certain length of time he would return to the bottom of the ladder and work up again.

A final step in setting up your club—and one of the most important — is the introduction of real railroad "atmosphere", as illustrated by the drawings on the margin of this page. Red lanterns, "stop-look-and-listen" signs and train announcement boards are but a few of the many devices which will give your clubhouse an authentic appearance.





The best pike in town...

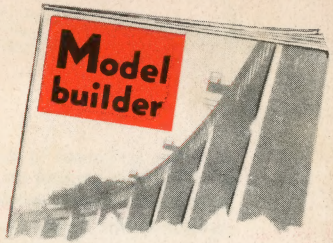
That's what Model Builder readers all over the country are saying. "I've got the best pike in town!" And they really have!

For with every issue of Model Builder you get loads of new, fresh, lively ideas to help pep up your model road, plus information to add new realism to your layout and make you want to buckle down to real railroading action.

Model Builder gives you simple instructions for designing and creating scenic effects, buildings of all sorts, cars, track layouts and locomotive conversions. You'll find articles on major railroads and short lines, plus an exciting new railroad quiz.

For real railroading facts and plenty of news about miniature pikes, be sure to get Model Builder magazine. For your 8 big issues, just send the coupon and $1.00—or $2.00 for 16 swell issues—to Model Builder.

Don't miss the next issue! Mail the coupon TODAY!



In Every Issue . . .

- Plans
- Ideas
- Scenery
- How to Build
- Track Layouts
- R. R. Quiz
- Pictures

Model Builder is jam-packed with exciting ideas and helpful plans . . . all written by men thoroughly experienced in model pike operation.

HOW TO BUILD IT . . . real scale buildings, packaging plants, factories, farm and city areas.

SCENERY . . . Dramatic landscaping, road beds, tunnels and realistic grade crossings.

TRACK LAYOUT . . . permanent and temporary, large and small, switching diagrams and easy instructions.

RAILROAD QUIZ . . . Run by and for the Model Builder readers — with Cash Prizes!

PICTURES . . . Of outstanding layouts of the readers — with Cash Awards to the best!

PLANS . . . Conversions of all types of Cars, Locos and Buildings.

IDEAS . . . Easy remodeling of your layout—to fit the season or for permanent display.

THIS FOR THAT . . . where you can trade equipment with other Model Builder readers.

8 for $1